```
SEQUENCE LISTING
```

```
<110> Hermeking, Heiko
            Vogelstein, Bert
            Kinzler, Kenneth
      <120> 14-3-3 SIGMA ARREST THE CELL CYCLE
      <130> 1107.77810
      <140> 09/210,748
      <141> 1998-12-15
      <150> 60/069,416
      <151> 1997-12-18
      <160> 18
      <170> FastSEQ for Windows Version 3.0
      <210> 1
      <211> 1320
      <212> DNA
      <213> Homo sapiens
      <400> 1
                                                                        60
qaqaqacaca gagtccggca ttggtcccag gcagcagtta gcccgccgcc cgcctgtgtg
                                                                       120
tccccagagc catggagaga gccagtctga tccagaaggc caagctggca gagcaggccg
                                                                       180
aacgctatga ggacatggca gccttcatga aaggcgccgt ggagaagggc gaggagctct
                                                                       240
cctgcgaaga gcgaaacctg ctctcagtag cctataagaa cgtggtgggc ggccagaggg
                                                                       300
ctgcctggag ggtgctgtcc agtattgagc agaaaagcaa cgaggagggc tcggaggaga
                                                                       360
aggggcccga ggtgcgtgag taccgggaga aggtggagac tgagctccag ggcgtgtgcg
                                                                       420
acaccytyct gggcctycty gacayccacc tcatcaagga ggccggggac gccgagagcc
                                                                       480
gggtcttcta cctgaagatg aagggtgact actaccgcta cctggccgag gtggccaccg
                                                                       540
gtgacgacaa gaagcgcatc attgactcag cccggtcagc ctaccaggag gccatggaca
                                                                       600
tcagcaagaa ggagatgccg cccaccaacc ccatccgcct gggcctggcc ctgaactttt
                                                                       660
ccgtcttcca ctacgagatc gccaacagcc ccgaggaggc catctctctg gccaagacca
                                                                       720
ctttcgacga ggccatggct gatctgcaca ccctcagcga ggactcctac aaagacagca
ccctcatcat gcagctgctg cgagacaacc tgacactgtg gacggccgac aacgccgggg
                                                                       780
                                                                       840
aagaggggg cgaggetece caggageece agagetgagt gttgeeegee acegeeeege
                                                                       900
cetgececet ceagtecece accetgeega gaggactagt atggggtggg aggeeecace
                                                                       960
cttctcccct aggcgctgtt cttgctccaa agggctccgt ggagagggac tggcagagct
gaggccacct ggggctgggg atcccactct tcttgcagct gttgagcgca cctaaccact
                                                                      1020
                                                                      1080
ggtcatgccc ccaccctgc tctccgcacc cgcttcctcc cgaccccagg accaggctac
                                                                      1140
ttctcccctc ctcttgcctc cctcctgccc ctgctgcctc tgatcgtagg aattgaggag
                                                                      1200
tqtcccqcct tqtqqctqaq aactqqacag tggcaggggc tggagatggg tgtgtgtgtg
                                                                      1260
tgtgtgtgtg tgtgtgtgtg cgcgcgcgcc agtgcaagac cgagactgag ggaaagcatg
                                                                      1320
tctgctgggt gtgaccatgt ttcctctcaa taaagttccc ctgtgacact caaaaaaaaa
      <210> 2
      <211> 248
      <212> PRT
      <213> Homo sapiens
```

<400> 2

Met Glu Arg Ala Ser Leu Ile Gln Lys Ala Lys Leu Ala Glu Gln Ala

Glu Arg Tyr Glu Asp Met Ala Ala Phe Met Lys Gly Ala Val Glu Lys 25 Gly Glu Glu Leu Ser Cys Glu Glu Arg Asn Leu Leu Ser Val Ala Tyr 40 45 Lys Asn Val Val Gly Gly Gln Arg Ala Ala Trp Arg Val Leu Ser Ser 55 60 Ile Glu Gln Lys Ser Asn Glu Glu Gly Ser Glu Glu Lys Gly Pro Glu 70 75 Val Arg Glu Tyr Arg Glu Lys Val Glu Thr Glu Leu Gln Gly Val Cys 85 9.0 Asp Thr Val Leu Gly Leu Leu Asp Ser His Leu Ile Lys Glu Ala Gly 110 100 105 Asp Ala Glu Ser Arg Val Phe Tyr Leu Lys Met Lys Gly Asp Tyr Tyr 125 120 Arg Tyr Leu Ala Glu Val Ala Thr Gly Asp Asp Lys Lys Arg Ile Ile 135 140 Asp Ser Ala Arg Ser Ala Tyr Gln Glu Ala Met Asp Ile Ser Lys Lys 155 Glu Met Pro Pro Thr Asn Pro Ile Arg Leu Gly Leu Ala Leu Asn Phe 175 170 165 Ser Val Phe His Tyr Glu Ile Ala Asn Ser Pro Glu Glu Ala Ile Ser 185 190 Leu Ala Lys Thr Thr Phe Asp Glu Ala Met Ala Asp Leu His Thr Leu 205 200 195 Ser Glu Asp Ser Tyr Lys Asp Ser Thr Leu Ile Met Gln Leu Leu Arg 220 215 Asp Asn Leu Thr Leu Trp Thr Ala Asp Asn Ala Gly Glu Glu Gly Gly 240 230 235 Glu Ala Pro Gln Glu Pro Gln Ser 245

<210> 3

<211> 7680

<212> DNA

<213> Homo sapiens

<400> 3

60 ggatcccagc ctgcccctcc acttctctcc caagccaggt cccggcatgg gtgggttatg 120 ctcatgctgg caatacttga aacgggttta ttaatgctgg gtattttgca caattttata 180 gacctctttt ctacatagtc ttttttaaat ggaaggagaa aatgtcagcc acattactgt 240 ctgtgtagtg ccaggtgaag ggttatcaga aggctggttg gttttaataa gtttattcca 300 agagacette tggctggaat gagtgagagt gtgtgtgcat gtgtgtgtgt gttcatgtgt 360 gccctgtatg aatgtggctg gctcccagat cccctgggct gccccctgcc ccatcccctt 420 tgagtatcag aagcactctg agccaagggg acagggggca cgtgcactgg tcacgagaaa 480 accetggget eccaetgggg etcageceag cetectatet tteettette tatggaette agacagccag tgtctgggga ctctgccact ctaccccag ccctacccac cagccccag 540 600 gtgaggette cagetgggae etgeecagae aggetgagee tgggegtggt gggtggggtg atggctctgg ggagcggctg ccatcctaca agccacaccc cctcctctga gctctgaata 660 720 tgggacccag tgccaggagc tggaagacaa ggtgtttctg ccaaacggga cctccatcca gagaaaagga agaaggtgca gggtgggcca agaggcaagt gaaggttggc ctgagtctgg 780 840 gccggaaact cagaggatgt ttctcctctg ctgggagctg tagtttctta tcaaaataga tattgttcca ccatccccct ccttggccct tcaagtgggc tgaagccttg gaaagtgaca 900 taggaagtcc ccagatcttg cccttctcac tccagaggct agtggtcaca gacagctggg 960 1020 aatggcagcc acagagggtc cctctggaga aacagcttca ccccagcctc agggccctgg gcatcactgc agtggccctg ggaggtgagg aagaagctgg ctagaggagg gggctcccac 1080 ctacctttta tttaagccag tattctttgt tcctgcttgt aataaaactt cagtttataa 1140 gagttgcttt gctttggttt ggtttttgtt tgcttttcct ttgctgaggc cccaactggg 1200 1260 agccctctgt tctttcagac aaatttggtt ctttcctggg gagactgtga gaaggcaggc agcccagtga tctggctaca ttttccctca cctggctgga gctctgtccg ctggaggaag 1320

```
1380
agcagagagg getgeggetg agcececatg ggeacgtgaa aagaggeeat eetgteeeet
                                                                      1440
ctttgtcccc tecacettcc cctgcctcag gggcttggag accccaaatt cttcttccct
actgcctttc cactccgatc cccaatgagt gcccagctaa gaaaatgttt gagacagtag
                                                                      1500
attccagttt gagageegga getteeetgg etaceaeete eaacetggge aceagggeee
                                                                      1560
                                                                      1620
agccagacaa ctcataacac tggcccacct ctctggtatc tccctcagga ggacacctgt
                                                                      1680
caggattttg ccatctcctg cacagcctga ggggagctaa caggcctctt tgcagagggt
                                                                      1740
tagctggtaa gaccgtttct tccctgtcgg ccagcactgc ccgctcccct ccacacca
teteatecte ategeatgee tegecaacee catggageee gteeatetgt etggtgtgtg
                                                                      1800
gtgcggtgtg tgtgctggtg gtggtagggt ctccagggac tccccgctaa gcagaaggat
                                                                      1860
cgggatatag ggcaaggcta aaagcccagc cccattgtgg actgaggaag tacgttcgcg
                                                                      1920
                                                                     1980
cagagcagct ctccagctgg aagaggaggt ggagggtgag gctggggaga ggatggcgaa
                                                                      2040
cctgccctga ggtgcttggg tctgtgctgg tggggtcctg gtatgcaggg gccaccggtc
                                                                      2100
actaacactc ttatgtcctg gctttctgtc cccgctgagc tttctctcac ccgcccgttt
                                                                      2160
teteteetge tteattgeet getgeetaag eettggeeet teteteggge agaggeaggt
                                                                      2220
getgtggeag cacetetece caceaecggg ceeetgeagg eegeeteeet eeteecagge
ctgctaaccc tetetettet cettetttge tgteetgeeg gggateteea gtgtgtgegg
                                                                      2280
gggcttaagg acctectgag gaccgetget etetgeetet ecaggaatgg eetgggggga
                                                                      2340
gccaggcacc cggcacctcc acctgcctaa cctgtggccc atctgccacc atctgtgcct
                                                                      2400
acagggtctg ccccccagcc tgcccggcct gtgtgctctc taggacccca tagggggcag
                                                                      2460
gggctggcct ctttgcccca ttcccgctcc atgccggcca gagtgtagaa agccataacg
                                                                      2520
cacgcagcca teagcacaat aatgtgacte tacgetgata tgeteeetet eteeteeact
                                                                      2580
gactteceet teeeggattt gtgaggtgte aagaetagga atetggeett agageetgee
                                                                      2640
                                                                      2700
cctccacccc ctcagatcag gcatagccat agtcaagccc agcaggtttc ctcaggagct
                                                                      2760
gtctggggtg ttgatggtgg atgacgctgc tgaacaagtt tggtgactgt tctaagcaca
                                                                      2820
actggcttga tactgttccc acggcctgtc cacctcccac ccccaaccct ccaccagagt
                                                                      2880
aggtaggatg tagggagggt gcgtgccgcc tttgctctag gcactgaggg accaagctag
                                                                      2940
ccgtgcacag ccccatacac ttcaggggcg taaaggaaag agctgagcca aggaaaatca
                                                                      3000
gctgagccca gggctggggg ctgcttgtct gctatcctgt acctttttt tttttaacca
                                                                      3060
aaataaagat teeeetette ttgeeataee attggetgte tggtggegee tttaetttgg
                                                                      3120
ggcccaggga tgggacctgc agtgggcgtg tggaacatat ggctccccct cgctcccagc
                                                                      3180
tttcttccag ctggccagtg ctgctctgga gatttacaag cacaacgaag ccaggaggga
                                                                      3240
cacaggaaaa gtggctgaca tccttttcac tctgcccctc cagaactctt ggtctcaatt
                                                                      3300
ccagacacca cccagcctta gctgacctct ggattctgat aggtcccagt gcaggctgag
acagagggtt taactccagt ttgggactgc catacccatg aactgagccc agcccagggt
                                                                      3360
                                                                      3420
aacqatctca tqqaaacttc tctctcccca gttgctgcac tacatcaaga tacacacatg
                                                                      3480
tgcatacact gtactatggg ctaaaaaaat acgtaccgct accgttcagc aagggcttgc
                                                                      3540
cgagtcccgg gcccattttc tcatcttaac ctgtgaggag gatgatgtca gcctttttac
                                                                      3600
agatgaggga actgagactc aaggaagaaa caggagctgc ccaaggtcac ccagctggca
aagcagcaaa teecagateg gaacetgate tetgeecega getetgagee atetgeacta
                                                                      3660
                                                                      3720
cccaaggaat gaatacagcg gtgggaggat gagatcttgg agaaacccta aaattagaga
                                                                      3780
atgtcatagc cagtagaggg cttagagttg atctgggcca gcctccttgt tttactgatg
                                                                      3840
gagaaattga agcccagagg caggaaggga cctgcccaag gccttataac agagctggga
                                                                      3900
tgcagtccca cactctgacc tcattccatt ctctctccat aaattctgca ctgtctctag
                                                                      3960
actggactgg tttagatgtg ggatactcta aacagcagtg ccttcaagag aaaaagaatc
                                                                      4020
agaactacga atcacttaaa agtaatgtaa gctactctgg gcacactgcc tatggggtcg
ccctgctcca caaggagcca caaaaataat taaaataatt taatatccct tcccaaaggt
                                                                      4080
                                                                      4140
aaccagtaaa gtaagctctt ggctaggtaa ctggactctt gttcacaact agccagtggg
                                                                      4200
aaaaqqtqct aqaqcttcct ctggccacct gtttaatttg atcattccaa gacagaaaca
                                                                      4260
tttcttagga agttctttct agaatctacc tggtgtccct cccactgcta tcagagccct
gtcctctgtc ctcagtggag gtagagagca aatggttgct gctttcttca tcacaaccct
                                                                      4320
                                                                      4380
tcaaagccta ttattaccag ctaagaagga ttggttgact atgggccaga gcccctgagc
                                                                      4440
ctgctggtag aatggatgct gtacaggagg gtggggaggt agcaggcaga atgaggaaag
                                                                      4500
cccctttgag ctgcaacccc agctcctgtc ctgctgactc agacagctga ctgtggagct
                                                                      4560
ccatgccctg ccagggcctg ctgcctcctg cccgtctgag ctcctgaact tgggaaatgg
aggcccagag gcaaagggag gtacctgaga caggaactga gtcaggatca acaggccaga
                                                                      4620
gcgggcagga ggtatcaggc agcctggctc ccagatgcac ccctgagctc cagcagggga
                                                                      4680
ggagtaggaa tgaaggggct teettgeeet tgeteatgge tatgeggagg gegtgaacea
                                                                      4740
                                                                      4800
ccaccaggtc ctctggctta agtggcggga agcaaatggt ccctccctgg actcaggctc
                                                                      4860
caaagtteet gggeetgeet teeaggttee eagtgteetg ggateteeag ettteeceag
```

```
4920
gacttgggga agccccggct ggatgactag tacaaatgaa ggcccctgag gttccaggac
ctgctgaggt cacaggaata tcctagatca agcttgtcca acccacggcc cacaggctgc
                                                                    4980
                                                                    5040
atgtggccca gaatggcttt gaatgcagcc caacacaaat tagtaaactt tcttaaaaca
                                                                    5100
ttatgagatt tttttgcaaa ttttttttt ttttttagct catcagttat tggtagtgtt
                                                                    5160
qqtatatttt atqtqtqqcc caagacaatt cttccaatqt ggcccaggga agccaaaaga
                                                                    5220
ttggacacgc ctgtcctaga tggagaggaa ggaggcagtg ctgagcacat ctggccattc
                                                                    5280
atccatctqq aqaqaaagg ctatgggcaa actgcttcct ctcccctgta gacacccagc
                                                                    5340
tgggaaggtc tggcctttgg taagtcctgg cttggggtcc ttcctcattt cacagaacct
                                                                    5400
aactctatgt tagtgctttg tgagtatatg ttgatcataa taaagttgac gggatttttt
                                                                    5460
cacatgataa taatagttgt catctggccg ggcatggtgg cttatgccta taatttcagc
                                                                    5520
actttggaag gctgaggcag gtggatcact tgaggtcagc tgttcgagac cagcctggcc
                                                                    5580
5640
ggtggtgcac ccttgtaatc ccagctactc gggaggctga ggcaggagaa tcacttgaac
ccaggaggtg gaggttgcag tgagctgaga ttgtgccact acactccagc ctgggtgaca
                                                                    5700
agagegaaac teegteteaa aaaaaaagaa aataataata ataatagttg ceatecatte
                                                                    5760
tactgtgctt tccattaact cgtgtaatcc tcacaagtcc cattttatag ttacaggaac
                                                                    5820
                                                                    5880
tgaggeteae agagettaaa teaettggee aaggeeacaa acagetataa gaattaeatt
taggcagtct gattccaaag atactagtct attctgtatc tcatagacaa acaatacata
                                                                    5940
ttcacttttt tgttgttgtt ttgttttgag acggagtctt gctctgtcac ccaggctgga
                                                                    6000
gtgcagtggc gccatctcgg ctcactgcaa cgtccgcctc ccgggttcaa gcgattctcc
                                                                    6060
tgcctcagcc tcccgagtag ctgggactac aggcatgtgc caccatgccc ggctaatttt
                                                                    6120
ttgtattttt agtagagaca gggttttcct gggttagcca gaatggtctc gatctcctga
                                                                    6180
ccttgtgatc cacccacctc agcctcccaa agtgctgaga tgacaggcgt gagccaccgc
                                                                    6240
                                                                    6300
gtccgaccta tattcactat ttataaattg gagagaataa gaaaatcaaa agggccaggt
                                                                    6360
qtaqtqactc acacctgtaa tcccagcact ttgggaagcc aaggcaggag gattgcttga
                                                                    6420
acccaquaqt toqaqaccag cotgggcaac atggtgagac cotgtotota caaaaaatac
aaaaattagc tgggcgttgt ggtgagcacc ttattcttag gaagctgagg caggaggatc
                                                                    6480
acctgaggcc aaggaggttg agactgcagt gagctgtgat cataccactg tacttcagcc
                                                                    6540
                                                                    6600
tggacatcag agtaagaccc tatctctaaa aaggaaattg agaagaaaga aaatcaaagg
gaagcaaaat cactcactct cactacctca agataccctc tagaagttgg tattttagtg
                                                                    6660
                                                                    6720
tggttcctat tgttttctgt gtcagttctc tgatttgagc aaaatctttg ggacgtcaaa
cttaaaatcc cctttacttc cttggaaacc ctgtagcatt agcccagaca tgtccctact
                                                                    6780
cctccttgtg gcaaagagaa ggatctcgtc tttggtcccc agagttctgg cctaagcctc
                                                                    6840
                                                                    6900
cctccaggag ggaagatgag tgttcagaca ctcagagtag ctgggggaga cacaggcctg
tgaaattatc ctggctcaac tattaggtcg gcagaatccc agtgaaggga gccctacctc
                                                                    6960
tgagccccat ctaagctttg gctatgggtg gggcagataa gcaggaatcc atccctatag
                                                                    7020
                                                                    7080
gctcaatgcc aacacctta ggtgaaactc ttgatgaaac ttgaggccag ggctccggca
agcagggaaa gaacgttggc aacagaggtc tccatctctg aggactctgc caggggtcag
                                                                    7140
                                                                    7200
agatggggca atggtcaaaa ggaaggaaca ggccaggcac agtggctcat gcccataatc
                                                                    7260
ccagcacttt gggaggctga ggcaggagga tcgcttgagc ccaggagttt gagacctgcc
                                                                    7320
tgggcaatgt agtgagatct gctctctatt taaaaaaaaa aaaaaggaaa gaacaagtaa
acttctgaga aacaggctgg gggaggcatc acgtagctgg aattgctgcc ccataaaaca
                                                                    7380
gaatggtatg tgtcactgcc acctcccttt ctcagtcctc tctctcccca ggttgctagc
                                                                    7440
gtcccctgg gggatcaaac tggactgctt cccagcctca gacagagagc agtctgagtc
                                                                    7500
                                                                    7560
aggcaggaaa gtgggacagc cggggagctg gaccccaccc tctgtgagcc ccgctggtac
                                                                    7620
ctgatggcat gtggcttgga gagggcaggt gacctggcgt ggagggccag agggtaaatc
                                                                    7680
ctcaaacaag tggcaacagg ccaccaactt gaaagggaaa attgtgtagt gatgggaaat
```

<210> 4

<211> 20

<212> DNA

<213> Homo sapiens

<400> 4 aggcatgtgc caccatgccc

<210> 5 <211> 23

| <212> DNA <213> Homo sapier | ns | | |
|---|--------------------------|-----|--|
| <400> 5 | | 0.0 | |
| gtagcattag cccagacatg t | icc | 23 | |
| <210> 6 <211> 20 <212> DNA <213> Homo sapier | ns | | |
| <400> 6 | | 20 | |
| rrrcwwgyyy rrrcwwgyyy | rrrcwwgyyy rrrcwwgyyy 20 | | |
| <210> 7 <211> 22 <212> DNA <213> Artificial | Sequence | | |
| <220> <223> PCR PRIMER | | | |
| <400> 7 acaggggaac tttattgaga g | ia | 22 | |
| <210> 8 <211> 19 <212> DNA <213> Artificial | Sequence | | |
| <220> <223> PCR PRIMER | | | |
| <400> 8 aagggctccg tggagaggg | | 19 | |
| <210> 9 <211> 20 <212> DNA <213> Artificial | Sequence | | |
| <220> <223> PCR PRIMER | | | |
| <400> 9 gaaaactacc cctaaaagcc | | 20 | |
| <210> 10 <211> 20 <212> DNA <213> Artificial | Sequence | | |
| <220> <223> PCR PRIMER | | | |
| <400> 10 gttgggtggc aggtattagg | | 20 | |
| <210> 11 | | | |

| | <211> 20 <212> DNA | |
|--------|------------------------------------|-----|
| | <213> Artificial Sequence | |
| | <220> | |
| | <223> PCR PRIMER | |
| | <400> 11 | 2.0 |
| gtgtgt | cccc agagccatgg | 20 |
| | <210> 12 | |
| | <211> 20 | |
| | <212> DNA | |
| | <213> Artificial Sequence | |
| | <220> | |
| | <223> PCR PRIMER | |
| | <400> 12 | |
| | tccc ggtactcacg | 20 |
| | (210) 12 | |
| | <210> 13 <211> 37 | |
| | <212> DNA | |
| | <213> Artificial Sequence | |
| | <220> | |
| | <223> PCR PRIMER | |
| | | |
| | <400> 13 | 37 |
| cctgta | gcat tagcccagac atgtccctac tecgtac | 3, |
| | <210> 14 | |
| | <211> 37 | |
| | <212> DNA | |
| | <213> Artificial Sequence | |
| | <220> | |
| | <223> PCR PRIMER | |
| | <400> 14 | |
| ggagta | ggga catgtctggg ctaatgctac agggtac | 37 |
| | <210> 15 | |
| | <211> 37 | |
| | <212> DNA | |
| | <213> Artificial Sequence | |
| | <220> | |
| | <223> PCR PRIMER | |
| | <400> 15 | |
| | gaat tatcccagaa atttccctac tccgtac | 37 |
| | <210> 16 | |
| | <210> 16 <211> 37 | |
| | <211> JV <212> DNA | |
| | <213> Artificial Sequence | |

| <220> <223> PCR PRIMER | |
|--|----------|
| <400> 16 ggagtaggga aatttctggg ataattctac agggtac | 37 |
| <210> 17 <211> 60 <212> DNA <213> Artificial Sequence | |
| <220> <223> PCR PRIMER | |
| <400> 17 gcatgcggta cctaatacga ctcactatag ggcgaccacc atggagagag ccagtctgat | 60 |
| <210> 18 <211> 86 <212> DNA <213> Artificial Sequence | |
| <220> <223> PCR PRIMER | |
| <pre><400> 18 acctccggat ccttagctag cgtaatctgg aacatcgtaa gcgtaatctg gaacatcgta tccaccgctc tgggggtcct ggggag</pre> | 60 86 |